GEARTECH	CHEC	KLIS	ST		No. CK9101		SHEET 1 OF 6			
GLANILOII				Rev. A						
Gear System Audit					BY RLE		DATE 7/05/98			
					CKD JRM		DATE 7/05/98			
APPLICATION DATA										
Overation		N.I.		PPLICA		0				
Question	Y	N	R			Comments				
Customer? Site?										
Type of application? Audit conducted by?										
Date of audit?										
Other?										
Other? DOCUMENTATION										
Overation		N.I.				0				
Question	Y	N	R			Comments				
Documents available?										
Installation drawing?	v2									
Assembly drawing of gearbox Lubrication schematic?	Λ:	-	-							
Lubrication schematic? Lube system bill of material?		-	-							
Maintenance manual?										
Service history?		 	 							
Oil lab analyses?										
Oil change interval records?										
Filter change interval records	2									
Alignment records?):									
Vibration records?										
Sound records?										
Temperature records?										
Other documents?										
Other documents:		ח	RIV	ER NΔN/	IEPLATE DATA					
Question	ΙΥ	ΙN	R			Comments				
Driver type?	'	11	11			Oommonto				
Driver serial number?										
Power?										
Speed?										
Service factor?										
Other?										
	l	D	RIV	EN NAM	IEPLATE DATA					
Question	Υ	N	R			Comments				
Driven type?	•	- ' '	- 1 \			Comments				
Driven serial number?										
Power?										
Speed?										
Service factor?										
Other?		l l	l l							
	GEARBOX NAMEPLATE DATA									
Question	Υ	N	R			Comments				
Gearbox type?	- ' -	· •	 ``			Commonto				
Gearbox manufacturer?										
Gearbox model?										
Gearbox serial number?										
Power?										
HS shaft speed?										
LS shaft speed?										
Service factor?										
Gear ratio?										
Lubricant specification?										
Lubricant viscosity?										

GEARTECH	CHEC	KLIS	ST	N	lo. CK9101		SHEET	2 OF 6
SEARTEST	Rev. A							
Gear System Audit		В	BY RLE		DATE	7/05/98		
,			CKD JRM		DATE	7/05/98		
	G	FΔR	ROX		ATE DATA (c	cont)		.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Question	ΤY	N	R	147 (IVILI L	MIL DATIA (C	Comments		
Lubricant volume?		11	11			Comments		
Temperature limits?								
Other?								
	l .	1	OI	ERATION	IAL DATA			
Question	Υ	N	R			Comments		
Continuous duty?								
Intermittent duty?								
Runtime/day?								
Total runtime logged?								
Other?								
			ΕN	VIRONME	NT AUDIT			
Question	Υ	N	R			Comments		
Record ambient temperature	?							
Record relative humidity?								
Water evident?								
Corrosion evident?								
Contamination evident?								
Overheating evident?								
Adequate airflow?								
Typical start-up temperature								
Typical running temperature Other?	?							
Otner?				NIND ATIO	NI ALIDIT			
Overtice	Υ	LAI		UNDATIC	IN AUDIT	0		
Question Baseplate solid?	Y Y	N	R			Comments		
Mounting bolts tight?								
Driver shimmed properly?								
Gearbox shimmed properly?)							
Driven shimmed properly?								
Other?								
	l .	1	Α	LIGNMEN [*]	T AUDIT			
Question	Υ	N	R			Comments		
Couplings per installation								
drawing?								
HS coupling type?								
LS coupling type?								
Date of last alignment?								
HS coupling alignment data?								
LS coupling alignment data?								
Coupling lubricant per spec?	,							
Date lube last changed?								
Other?		<u> </u>		\ A TION ! O`	/OTENA ALIE	_		
				ATION SY	YSTEM AUDI			
Question	Y	N	R			Comments		
Lube system components per Bill of Material?	er							
Lube system plumbed per								
lubrication schematic?		ļ						
Lube system connections properly bolted?								
Lube system electrical								
connections properly made?								

GEARTECH	CHECKLIST				No. CK9101		SHEET	3 OF 6
32 /4/12311					Rev. A			
Gear System Audit			BY RLE		DATE	7/05/98		
					CKD JRM		DATE	7/05/98
	11	IBRIC	:AT	ION SY	STEM AUDIT (cont)	1	
All openings properly sealed			,, , ,		STEIN NOBIT (00111.7		
Oil vendor correct?								
Oil type correct?								
Oil viscosity correct?								
Oil capacity correct?								
Oil level correct?								
Oil filter correct?								
Valves set so oil filter is								
operational?								
Oil filter clean?								
Heat exchanger correct?								
Heater correct?								
Valves set so magnetic trap	is							
operational?								
Is magnetic trap clean?								
Breather correct?								
Breather clean?								
Dwell time ≥ 4 minutes?								
Suction ≥ 150 mm below								
surface?								
Return below surface?								
Suction and return separate	?							
				HOUSE	KEEPING			
Question	Υ	N	R			Comments	i	
Are all gearbox and lube								
system ports closed?								
Are oil drums properly stored	1?							
Are oil drum ports closed?								
Are oil drum tops clean?								
Take oil samples from drums								
Oil transfer pump flushed wit	:h							
clean oil?								
Is oil transferred thru a filter?								
Is area around gearbox clear								
Is gearbox free of debris, too	ols,							
rags, and hardware?	\leftarrow							
Gearbox breathers installed?	<u> </u>							
When opening ports are the	d:							
following precautions followed Open ports one at a time?	u.							
Clean inspection cover & are								
around port before opening? Count inspection cover bolts								
before opening?								
Keep inspection cover bolts	in							
separate containers?								
Technicians have nothing in								
shirt pockets?								
Flashlights & tools on								
lanyards?								
Ports closed immediately aft	er							
inspection?								
All inspection cover bolts								
accounted for?								

GEARTECH	CHECKLIST				No. CK9101		SHEET 4 OF 6
GEARTECH					Rev. A		
Gear System Audit					BY RLE		DATE 7/05/98
Scar System / taut					CKD JRM		DATE 7/05/98
			<u> </u>	A DDOV			DATE 7/05/96
		T		ARBUX	INSPECTION		
Question	Y	N	R			Comments	
Inspect exterior for following:							
Overheating?			-				
Corrosion?							
Contamination? HS shaft oil leaks?							
LS shaft oil leaks?							
Breather leaks?							
Other leaks?							
Housing damage?							
Inspect interior for following:							
Overheating?							
Corrosion?							
Contamination?							
Sludge?							
Varnish?							
Wear debris?							
Take samples of oil?							
Take samples of wear debris	?						
Record bearing endplay?							
Record backlash?							
Record contact patterns?							
Photograph gear teeth?							
Failure modes (AGMA 1010)):						
Cold flow?							
Hot flow?							
Indentation?							
Rolling?							
Rippling?							
Ridging?							
Root fillet yielding?							
Tip/root interference?							
Root fillet cracks?							
Profile cracks?							
Tooth end cracks?							
Nonprogressive macropitting	?						
Progressive macropitting?			1				
Spall macropitting?							
Flake macropitting?							
Micropitting?							
Subcase fatigue?							
Adhesion?							
Abrasion?							
Corrosion?							
Fretting corrosion?			+				
Polishing?			+				
Electric discharge? Cavitation?			+				
Erosion?			+	-			
Scuffing?			+	-			
Hardening cracks?		1	1	1			
Grinding cracks?			+				
Rim and web cracks?			+				
Case/core separation?			+				
Jacor Jor o Jopanation:			1	ĺ			

GEARTECH	CHECKLIST				No. CK9101		SHEET 5 OF 6			
					Rev. A		DATE 7/05/00			
Gear System Audit					BY RLE		DATE 7/05/98			
					CKD JRM		DATE 7/05/98			
LUBE SYSTEM TEST										
Question	Y	N	R		C	comments				
Jog pump motor. Rotation correct?										
Run lube system w/o rotating	1									
gearbox and check following										
Pump motor quiet?										
Oil pump quiet?										
Piping vibrating?	o il									
Leaks in piping, housing, or seals?	JII									
System oil pressures per specification?										
Filter differential pressure pe specification?	r									
System oil temperatures per specification?										
Oil level correct?										
Oil pressure switch set point correct?	S									
Oil temperature switch set										
points correct?										
Take oil samples?				CEADR	OX TEST					
Question	ΙΥ	N	R	GLAND		Comments				
Jog drive motors. Rotation	<u> </u>	.,				2011111101110				
correct?										
Run lube for 15 min before rotating gearbox?										
Open inspection ports (see										
housekeeping). Oil flow										
correct? Shutdown and check magne	tic									
trap. Magnetic trap clean?	tio									
Start gearbox rotation and se	et									
speed to specification?										
Record lube pressures, filter differential pressure, and oil										
temperatures every 15 min.?	,									
Run (2 hours minimum) until										
oil temperatures stabilize?										
Leaks in piping, housing, or established	oil									
Record sound per ANSI/AGMA 6025?										
Record vibration per ANSI/AGMA 6000?										
Record bearing temperature	s?									
Record oil temperatures?										
		-	-							
	+									

GEARTECH	CHEC	KLIS	ST		No. CK9101		SHEET 6 OF 6
CLARTEON					Rev. A		
Gear System Audit				BY RLE		DATE 7/05/98	
					CKD JRM		DATE 7/05/98
			POS	T TEST	INSPECTION		
Question	Υ	N	R			Comments	
Shutdown and check magne		<u> </u>	1				
trap. Magnetic trap clean?							
Shutdown and check oil filter	r.						
Oil filter clean?							
Open gearbox inspection po	rts						
(see housekeeping):							
Internals clean and free of							
distress?							
Contact patterns correct? Record contact patterns?							
Misalignment evident?							
Wear steps evident?							
Oil foam evident?							
Open lube system inspection	<u> </u>						
ports (see housekeeping):							
Oil foam evident?							
Overheating?							
Corrosion?							
Contamination?							
Sludge?							
Varnish?							
Wear debris?							
Take samples of oil?	-0						
Take samples of wear debris Close all inspection ports an		1					
return system to operation?	a						
retain system to operation:			I		REPORT		
Question	Υ	N	R			Comments	
Inspectors name?	<u> </u>	IN	11			Comments	
Date?							
Gearbox serial number?							
Calculate pitchline velocity?							
Oil type per ANSI/AGMA							
9005?							
Oil viscosity per ANSI/AGMA	٦						
9005?							
Oil per gearbox nameplate?							
Oil pour point at least 5°C							
below start-up temperature? Sound per ANSI/AGMA 602		-					
Vibration per ANSI/AGMA	3?						
6000?							
Record bearing temperature	s?	1					
Record oil temperatures?		1	-				
Record contact patterns?		1					
		+					
		1					
		+					
		†					
		1					
		1					